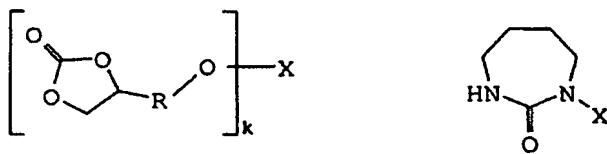


Patent claims

1. A process for modifying a substrate which has functional groups which are selected from hydroxyl groups and primary and secondary amino groups, in which at least one substrate is brought into contact with a compound of the formula I or II under conditions such that the functional groups react, with opening of the 1,3-dioxolane ring or 1,3-diazahexane ring and formation of a covalent bond, with the compound of the formula I or II



I

II

in which

R is C₁-C₁₂-alkylene;

15 if k is 1, X is CO-CH=CH₂, CO-C(CH₃)=CH₂, CO-O-aryl, C₂-C₆-alkylene-SO₂-CH=CH₂ or CO-NH-R¹; and

20 R¹ is C₁-C₃₀-alkyl, C₁-C₃₀-haloalkyl, C₁-C₃₀-hydroxyalkyl, C₁-C₆-alkoxy-C₁-C₃₀-alkyl, C₁-C₆-alkylcarbonyloxy-C₁-C₃₀-alkyl, amino-C₁-C₃₀-alkyl, mono- or di(C₁-C₆-alkyl)amino-C₁-C₃₀-alkyl, ammonio-C₁-C₃₀-alkyl, polyoxyalkylene-C₁-C₃₀-alkyl, polysiloxanyl-C₁-C₃₀-alkyl, (meth)acryloyloxy-C₁-C₃₀-alkyl, sulfono-C₁-C₃₀-alkyl, phosphono-C₁-C₃₀-alkyl, di(C₁-C₆-alkyl)phosphono-C₁-C₃₀-alkyl, phosphonato-C₁-C₃₀-alkyl, di(C₁-C₆-alkyl)phosphonato-C₁-C₃₀-alkyl or a saccharide radical and,

25 if k is an integer of more than 1, X is (i) the radical of a polyamine to which the moiety in brackets in the formula is bonded via (CO)NH groups, or (ii) a 30 polymeric skeleton to which the moiety in brackets in

the formula is bonded via (CO), NH-C₂-C₆-alkylene-O-(CO) or (CO)-O-C₂-C₆-alkylene-O(CO) groups.

2. The process as claimed in claim 1, the substrate being
5 selected from biomolecules, polymers or surfaces.

3. The process as claimed in claim 2, the substrate being
a polymer.

10 4. The process as claimed in claim 3, in the compound of
the formula I or II X being CO-NH-R¹ and at least some
of the radicals R¹ being ammonioalkyl.

15 5. The process as claimed in claim 4, some of the
radicals R¹ being radicals differing from
ammonioalkyl.

20 6. The process as claimed in claim 1, the compound of the
formula I or II being brought into contact with a
first substrate under conditions such that a covalent
bond forms between a first end of the compound of the
formula I or II and the first substrate, and the
reaction product being brought into contact with a
second substrate under conditions such that a covalent
bond forms between a second end of the compound of the
formula I or II and the second substrate.

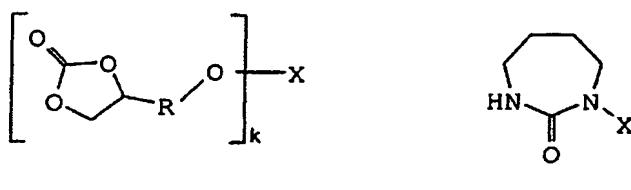
25 7. The process as claimed in claim 6, the first and/or
second substrate being selected from biomolecules,
polymers or surfaces.

30 8. The process as claimed in claim 7, the polymer being
selected from polyalkyleneamines, polyvinylamine,
polyallylamine, polyethylenimine, chitosan,
35 polyamide/epichlorohydrin resins, polyaminostyrene,
peptides or proteins.

9. The process as claimed in any of the preceding claims, the compound of the formula I being selected from
 4-phenyloxycarbonyloxymethyl-2-oxo-1,3-dioxolane,
 4-(4-phenyloxycarbonyloxy)butyl-2-oxo-1,3-dioxolane,
 5 2-oxo-1,3-dioxolan-4-ylmethyl acrylate,
 2-oxo-1,3-dioxolan-4-ylmethyl methacrylate,
 4-(2-oxo-1,3-dioxolan-4-yl)butyl acrylate,
 4-(2-oxo-1,3-dioxolan-4-yl)butyl methacrylate,
 4-(vinylsulfonylethoxy)butyl-2-oxo-1,3-dioxolane.

10

10. A compound of the formula I or II



I

II

in which R is C₁-C₁₂-alkylene;

if k is 1, X is C₂-C₆-alkylene-SO₂-CH=CH₂ or CO-NH-R¹;

15 and R¹ is C₁-C₃₀-alkyl, C₁-C₃₀-haloalkyl, C₁-C₃₀-hydroxyalkyl, C₁-C₆-alkoxy-C₁-C₃₀-alkyl, C₁-C₆-alkylcarbonyloxy-C₁-C₃₀-alkyl, amino-C₁-C₃₀-alkyl, mono- or di(C₁-C₆-alkyl)amino-C₁-C₃₀-alkyl, ammonio-C₁-C₃₀-alkyl, polyoxyalkylene-C₁-C₃₀-alkyl, polysiloxanyl-C₁-C₃₀-alkyl, sulfono-C₁-C₃₀-alkyl, phosphono-C₁-C₃₀-alkyl, di(C₁-C₆-alkyl)phosphono-C₁-C₃₀-alkyl, phosphonato-C₁-C₃₀-alkyl, di(C₁-C₆-alkyl)phosphonato-C₁-C₃₀-alkyl or a saccharide radical and,

20

25

if R is C₂-C₁₂-alkylene, X may also be CO-aryl, CO-CH=CH₂, CO-C(CH₃)=CH₂ or (meth)acryloyloxy-C₁-C₃₀-alkyl-NH-CO,

30

or if k is an integer of more than 1, X is the radical of a polyamine to which the moiety in brackets in the

formula is bonded via (CO)NH groups.

11. The compound as claimed in claim 10, in which R¹ is
 - (CH₂)_n-CH₃,
 - (CH₂)_n-(CF₂)_m-CF₃,
 - (CH₂)_n-[Si(CH₃)₂-O]_p-H,
 - (CH₂)_n-Si(OSi(CH₃)₃)₃,
 - (CH₂)_n-(O-CH₂-CHR⁴)_p-OR³,
 - R²-OH,
 - R²-NH₂,
 - R²-NR³₃⁺Y⁻,
 - R²-SO₃H,
 - R²-PO₃H₂,
 - R²-OPO₃H₂
- 15 or a saccharide radical,
R² being C₁-C₁₈-alkylene, R³ being C₁-C₁₈-alkyl or benzyl and R⁴ being hydrogen or methyl,
Y being one equivalent of an anion,
n and m independently of one another, being an integer from 0 to 12; and
20 p being an integer from 1 to 100.
12. The compound as claimed in claim 10, selected from
 - 4-(4-phenyloxycarbonyloxy)butyl-2-oxo-1,3-dioxolane,
 - 2-oxo-1,3-dioxolan-4-ylmethyl acrylate,
 - 2-oxo-1,3-dioxolan-4-ylmethyl methacrylate,
 - 4-(2-oxo-1,3-dioxolan-4-yl)butyl acrylate,
 - 4-(2-oxo-1,3-dioxolan-4-yl)butyl methacrylate,
 - 4-(vinylsulfonylethoxy)butyl-2-oxo-1,3-dioxolane.
- 30 13. A modified polymer obtainable by the process as claimed in any of claims 3 to 5.
- 35 14. The use of the modified polymer as claimed in claim 13 as a finish, dispersant, emulsifier, adhesion promoter, adhesive or contact adhesive, for modifying surfaces or for immobilizing active substances.